

C. Remarks

The claims are 1, 2, 4, 5, 9, 16, and 25-27, with claims 1, 2, 4, and 5 being independent. Claims 3, 6-8, 10-15, and 17-24 have been cancelled without prejudice or disclaimer. Claims 1, 2, 4, and 5 have been amended to clarify the present invention and rephrased to improve their form. Support for this amendment may be found, for example, in the specification at page 39, lines 13, and in the drawings. Claims 9 and 16 have been amended to reflect the changes in claims 4 and 5. New claims 25-27 have been added. Support for these claims may be found, for example, in claims 9 and 16, as well as in Fig. 4E. No new matter has been added. Reconsideration of the claims is respectfully requested.

Claims 4-7 are objected to due to minor informalities.

Since Applicants have amended claims 4 and 5 to resolve the informalities and claims 6 and 7 have been cancelled, withdrawal of the objection is respectfully requested.

Claims 1-24 stand rejected under 35 U.S.C. § 112, second paragraph, for being allegedly indefinite due to various antecedent basis issues.

Applicants have amended the claims to resolve the issues identified by the Examiner. Therefore, withdrawal of the indefiniteness rejection is respectfully requested.

Claims 1-24 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent Application Publication No. 2004/0070643 A1 (Kubota). The claims also stand rejected under the judicially created doctrine of obviousness-type double patenting over the claims that issued in Kubota (U.S. Patent No. 6,951,380 B2). The grounds of rejection are respectfully traversed.

Prior to addressing the merits of the rejection, Applicants would like to briefly discuss some of the features of the presently claimed invention. That invention, in pertinent part, is related to a method for manufacturing a minute structure. This method includes a step of providing a first polymethyl isopropenyl ketone (PMIPK) layer, and a step of providing, on the first layer, a second layer including a photosensitive material of a copolymer obtained by copolymerization of a methacrylate and a methacrylic acid or anhydride (PMMA). The desired pattern from the second layer is formed by exposing a part of the second layer and removing the exposed part using a developing solution. The desired pattern from the first layer is formed by exposing a part of the first layer and removing the exposed part using a developing solution. A liquid discharge head with a passage for liquid is formed in a similar manner.

Kubota is related to a method of manufacturing a microstructure and a liquid discharge head. As the Examiner recognized, Kubota discloses forming PMIPK and PMMA layers in the opposite arrangement from that presently claimed. The Examiner, however, alleged that the process in Kubota could easily be performed by reversing the materials for the first and second layers. Applicants respectfully disagree.

Initially, Applicants would like to point out that since, as the Examiner recognized, the layers in Kubota are not formed in the presently claimed arrangement, Kubota cannot anticipate the present claims. To anticipate under 35 U.S.C. § 102, a reference “must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)) (emphasis added).

Applicants also submit that reversing the layers in Kubota would not have been obvious. The data provided in the present application in the Examples and the Comparative Examples demonstrates that forming the layers as presently claimed provides unexpectedly superior results.

As is apparent from the results shown in Table 1 (page 69), in the ink-jet heads manufactured in accordance the present invention, no film reduction, cracking, or residue was found in the mold material, and both the nozzle yield and the printing yield were preferable. However, in Comparative Examples 1 and 3, where the layers were reversed, a reduction in sensitivity and cracking, as well as residue, were observed. Also, in terms of both the nozzle yield and the printing yield, the nozzles in the Comparative Examples were poorer than those manufactured in accordance with the present invention.

In sum, the unexpectedly superior results shown by the comparative data in the present application rebut a presumption that it would have been obvious to reverse the first and second layers in Kubota as alleged by the Examiner. Therefore, the presently claimed invention is patentable over Kubota. Also, for the same reasons, the present claims are not a double patenting of the claims as issued in Kubota.

Wherefore, withdrawal of the outstanding rejections and passage of the application to issue are respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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